COREA HARBOR
MAINE

SURVEY

(REVIEW OF REPORTS)

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.

APRIL 7, 1959

49

ARMY-NED-WALTHAM, MASS.

SURVEY

REVIEW OF REPORTS

COREA HARBOR, MAINE

SYLLABUS

The Division Engineer finds that prospective benefits, to be derived by provision of locally desired additional anchorage at Corea Harbor, Maine, are insufficient to economically justify construction. The evaluated annual benefits of $3,000 compared with the estimated annual charges of $12,000 results in a benefit-cost ratio of 0.3. Therefore the Division Engineer recommends no modification of the existing project for Corea Harbor at this time.

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U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM 54, MASS.

NEDGW 7 April 1959

SUBJECT: Survey (Review of Reports) of Corea Harbor, Gouldsboro, Maine

TO: Chief of Engineers, Department of the Army, Washington, D.C.

AUTHORITY

1. This report is submitted in compliance with the following resolution adopted June 11, 1952 by the Committee on Public Works of the House of Representatives, which reads as follows:

> "Resolved by the Committee on Public Works of the House of Representatives, United States, that the Board of Engineers for Rivers and Harbors be, and is hereby requested to review the reports on Corea Harbor, Maine, submitted in River and Harbor Document 27, 74th Congress, 1st Session and other pertinent reports, with a view to determining if any modification of the existing project is advisable at this time."

2. A review report was assigned by the Chief of Engineers on July 9, 1952.

PURPOSE AND EXTENT OF STUDY

3. This study considered the need and justification for enlargement of the existing Federal project. Preparation of this report included consideration of data obtained from local interests at the public hearing, field reconnaisance, office study of existing records, and the records of the public hearing.

DESCRIPTION OF NAVIGATION CONDITIONS

4. Corea Harbor, a small well sheltered cove, is situated immediately west of the entrance to Gouldsboro Bay, Maine. It is 12 miles east of Bar Harbor, Maine. Entrance to the harbor is obtained by navigation of an 80-foot wide entrance channel, with a controlling depth of about 8 feet. The harbor itself is somewhat rectangular in shape, its longitudinal dimension being about 1,100 feet, its latitudal about 800 feet. A narrow cove about 300 feet wide extends northeastward from the harbor. This cove was used as a disposal area in the original dredging of the anchorage. Its bottom is exposed at low water with elevations ranging to about 6 feet above mean low water.

5. The wharf area is located generally along the northerly and westerly sides of the harbor; although one large lobster pound is located in the southwest corner. The area is about 200 feet distant from the existing anchorage. Access to the wharves by boat is possible only at high water as the approaches are of shallow depth with some portions exposed at low water. There are 3 wharves on the easterly side.

6. The dredged anchorage is 600 feet long by 400 feet wide, with a depth of 8 feet throughout the greater part of its area. About 38 local fishing boats use this anchorage under what is claimed to be crowded conditions. As a result of the claimed overcrowding a few boats anchor in the entrance channel, making navigational conditions difficult in this area. There are no bridges affecting navigation in the area of Corea Harbor.

7. The locality is shown on United States Coast and Geodetic Survey chart numbered 305, and on the map accompanying this report.

TRIBUTARY AREA

8. The immediate tributary area is the village of Corea, a section of the town of Gouldsboro, Hancock County, Maine. In 1950, the population of Gouldsboro was 1168. Real Estate valuation in the same year amounted to $745,755. There are no manufacturing industries in the town. The principal occupation of the local residents are those connected with fishing and fish processing. Two fish canneries are located in Gouldsboro. Neither of these is located in the Corea Harbor area.

9. There are no rail connections to the town. The nearest railroad, a branch of the Maine-Central Railroad is located at Ellsworth, 25 miles north. The area contains a system of paved highways over which bus and trucking lines provide connections to outer points.

PRIOR REPORTS

10. There have been three prior reports on Corea Harbor. The first was a preliminary examination, published in House Document No. 425, 62nd Congress, 2nd Session. It was unfavorable to improvement of the harbor by dredging. The second, published in House Document No. 1003, 65th Congress, 2nd Session, was unfavorable to improvement of the harbor at that time. The third report was published in House Document No. 27, 74th Congress, 1st Session. The District Engineer, Boston, Massachusetts, recommended improving Corea Hargor by dredging an anchorage basin 600 feet long and 400 feet wide. The Division Engineer, North Atlantic Division, did not concur with the findings of the District Engineer and recommended no improvement. The Chief of Engineers, and the Board of Engineers for Rivers and Harbors concurred with the District Engineer and recommended improvement. The existing project is based on this report.

EXISTING CORPS OF ENGINEERS PROJECT

11. The existing project was adopted on August 30, 1935. It provides for an anchorage basin 600 feet long, 400 feet wide, and 8 feet deep. Work on the existing project was initiated on August 29, 1938 and completed on September 29, 1938. A total of 50,038 cubic yards of ordinary materials were removed at a cost of about $32,000. Maintenance dredging, restoring it to project depth, was accomplished in 1953. About 24,000 cubic yards of material was removed at a cost of about $60,000.

LOCAL COOPERATION ON EXISTING AND PRIOR PROJECTS

12. No requirements of local cooperation were contained in the Act authorizing the existing project.

OTHER IMPROVEMENTS

13. No known improvements for navigation have been made by either local government or private interests.

TERMINAL AND TRANSFER FACILITIES

14. Of a total of about 15 wharves in the harbor only three are reported to be used commercially. The first, owned by Corea Seafoods Company, is of pile and timber construction. It is 150 feet long by 50 feet wide. Shallow water in its berth and approaches make it inaccessible to boats during low water periods. The second, also of pile and timber construction, is owned by the Corea Lobster Company. It is 100 feet long by 50 feet wide. Depth of water at its berth is about 5 or 6 feet. The third wharf is owned by the Francis Lobster Pound. It is of pile and timber construction, 150 feet long by 50 feet wide, and similar to the previous two, is inaccessible during low water periods. Storage buildings of wood have been erected on all the wharves. Water and fuel, together with electric hoists for unloading are also available.

15. The remaining wharves are also of pile and timber construction. Shallow depths also prevail at these wharves.

IMPROVEMENT DESIRED

16. In order to determine the nature and extent of improvement desired by local interests, a public hearing was held at the Goulds-boro Grammar School on December 18, 1957. Attendance included representatives from State and municipal governments, fish dealers, fishermen, and local citizens. No detailed plan, other that the general desire for additional anchorage, was submitted.

17. The Maine Department of Sea and Shore Fisheries, in conjunction with the Maine Port Authority and the Gouldsboro Board of Selectmen, submitted a statement in justification of Federal improvement of the harbor. The statement requested enlargement of the present anchorage, preferably to the northeastward in accordance with the desire of local interests. It emphasized the status of Corea as a lobster fishing community. A full time fishing fleet of 38 boats, with a seasonal peak of 50 boats, was given as the locally based fleet. The total value of this fleet was estimated to be in excess of $100,000. The value of fish landed annually was estimated to be $216,000.

18. The inadequacy of the present anchorage for the existing fleet was offered as one of the main reasons for improvement. At the present time about five or six boats anchor in the entrance channel, as there is no space left in the anchorage. This crowded condition was cited as not allowing for expansion of the present fleet, which expansion, it was claimed, is both desirable and necessary for the town's economy. The proximity of the harbor to the fishing grounds was also given as a reason for improvement. It was stated that Corea is two hours nearer to the grounds than some of the other harbors in the vicinity. If improvement were made a number of boats that now by-pass the harbor would be encouraged to locate in Corea as a result of the time and expense saved by being nearer the grounds. Yachts and recreational craft cruising in the vicinity of Corea Harbor now hesitate to enter due to the prevailing crowded conditions. The statement declared that this type of craft would be encouraged to visit with a larger anchorage. Overall benefit to the town, estimated by the Board of Selectmen, would be in the vicinity of a 20 to 40 percent increase in annual income.

19. The hearing developed the fact that several large draggers, at intervals, land fish catches in Corea Harbor. During low water periods these boats are forced to moor in the anchorage and wait for sufficient tide for access to the wharves. It was stated that mooring and waiting for tide is not possible at all times due to crowded conditions in the anchorage. It was also stated that entrance into the harbor is difficult at low water as boats moored in the entrance channel obstruct passage by other boats. Local interests stated that some boats moored in the entrance channel because of lack of room in the anchorage.

20. Local interests also advocated enlargement of the harbor as an inducement for fish processors to locate in the area. It was stated that one company was favorably disposed toward locating in Corea but was deterred from doing so because of inadequate space in the anchorage. The company stated that, with the present anchorage insufficient boats could be accomodated to keep the plant active at all times. Also, the lack of sufficient depth in the wharf area was a considerable factor in the company's determination to locate elsewhere. One other local resident stated that he considered a similar venture into the fish business. The same deficiencies in the harbor caused him to reconsider.

21. The majority of local interests favored expansion of anchorage to the northeastward. Space is limited in this location. About 2 acres are available, allowing for about a dozen boats anchoring by the present method of free swinging. The depth desired at the hearing was 8 feet, similar to the existing project. Subsequent information from local interests indicated that a 6-foot depth would be acceptable in this locality.

22. Some desire was expressed for expansion of the area immediately west of the entrance channel. Available area is limited in this section also. About 2.6 acres of anchorage could be provided. The probability of encountering ledge appears to be moderately good, as there is a ledge point, exposed at mean low water, immediately south of the area. If ledge were required to be removed, costs of deepening the area would be relatively high.

23. Throughout the hearing at various times, several fishermen declared that access to the wharves was not possible at low water periods. The major portion of the area between the wharves and the anchorage is bare at low water. Dredging of this area was requested. Costs of such improvement would be high as there is some ledge in the area.

EXISTING AND PROSPECTIVE COMMERCE

24. The sole item of commerce in Corea Harbor consists of fish, both groundfish and shellfish. In 1956, the latest year for which records are available, a total of 438 tons of such products were landed. Of this total 325 tons were lobsters and the rest groundfish. Reported commerce in the harbor has varied over the past decade, ranging from a high of 1120 tons in 1947 to a low of 124 tons in 1952. For the four year period 1953 to 1956 inclusive, the volume reported has been fairly constant, averaging slightly over 400 tons annually. This volume, compared with the capacity of the locally based lobster and part time fishing fleets, appears reasonable for average annual commerce in the harbor.

25. Fish landings are not expected to increase materially in future years. The absence of fish processing plants, inadequate landing facilities and the presence of several better equipped harbors nearby all tend to preclude future expansion of commerce in fish in the area.

VESSEL TRAFFIC

26. Total vessel trips reported for Corea Harbor in 1956 amounted to 17,720. No specific details relative to drafts are available, however on the basis of the reported composition of the local fishing fleet together with data presented at the hearing it is considered that about 90 percent of these trips were made by lobsterfishing boats

whose drafts range in the vicinity of three or four feet. The remaining 10 percent were made by boats drawing 6 to 8 feet. As the anticipated commerce is not expected to increase materially, it is not considered that vessel trips will increase by any appreciable amount.

DIFFICULTIES ATTENDING NAVIGATION

27. The chief difficulties attendant on navigation in the harbor consist of shallow depths in the area adjacent to the wharves, and crowded conditions in the anchorage. The area outside the limits of the existing anchorage shoals very rapidly shoreward of the anchorage limits. Most of the wharf berths are above low water thus permitting navigation to them only between half and full tides.

28. The crowded condition of the anchorage stems from the type of mooring employed. Boats are moored at single moorings and allowed to swing free. It is considered that a more efficient type of mooring would alleviate this condition.

WATER POWER AND OTHER SPECIAL SUBJECTS

29. The waterway is tidal. Matters of flood control, pollution, hydro-electric power, and related subjects are not pertinent to this investigation. No item of the considered work would have an adverse effect on either shellfish or wildlife.

PLAN OF IMPROVEMENT

30. The plan of improvement, considered in this report is in consonance with the desires of local interests, with one exception. The exception consists of deepening the area between the wharves and the limits of the anchorage. Examination of probing data from surveys made prior to construction of the existing project revealed the existence of ledge on the east and west sides of the harbor, with a probability of ledge on the north side. In view of the high cost of rock removal, it was considered that sufficient benefits could not be derived to justify its deepening.

31. One area considered for anchorage extension is at the northeast corner of the existing anchorage. The other is immediately south of the anchorage and west of the entrance channel. The northeast area woudl be 150 feet wide and average 555 feet in length, or about 2 acres. The second area would be 200 feet wide and 765' in its longest dimension with an area of about 2.6 acres. Depth considered for both anchorages was 6 feet. In view of the preponderance of boats in the local fleet which draw less than 6 feet, it is believed that a depth of 6 feet would be ample for these boats.

SHORE LINE EFFECTS

32. The shore line of the harbor is generally rocky, consisting of large areas of ledge outcrop with very little overburden between ledge points. It is considered that dredging in such an area would have no effect on the shore line.

AIDS TO NAVIGATION

33. The United States Coast Guard has been consulted with respect to the need for additional aids to navigation in the event of improvement. The service has reported that no additional aids will be required.

ESTIMATES OF FIRST COST

34. Estimates of first cost have been prepared for the improvements studied. While there is evidence of considerable ledge rock in the locality, probings taken in prior surveys indicated no ledge in the areas considered. Therefore estimates were based on dredging ordinary materials of mud, sand, and gravel. Dredging quantities are in terms of in-place measurement and provide for dredging to 6 feet with an allowance of one foot for overdepth. Side slopes of 1 vertical on 3 horizontal were used. Dredging costs are based on experience on similar work in the area and price levels of March 1959.

Project Construction Cost

Desired Improvement:	2 anchorage areas 4.6 acres 6 feet deep, 58,000 cubic yards of mud, sand and gravel @ $3.05	$177,000*
Engineering and Design		5,000
Supervision and Administration		10,000
Pre-authorization Studies		3,000
Aids to Navigation (March 1959)		-
	Total Project Cost	$195,000

* Includes contingencies.

ESTIMATES OF ANNUAL CHARGES

35. The estimated annual carrying charges for the improvements considered in this report have been computed on an assumed life of 50 years and at an interest rate of 2.5 percent. The estimate for annual maintenance is based upon the silting rate experienced for the existing project.

Estimated Annual Charges

Interest ($195,000)(.025)	$4,900
Amortization ($195,000)(.01026)	2,000
Additional Annual Maintenance	5,100
Total	$12,000

APPORTIONMENT OF COSTS AMONG INTERESTS

36. Since all of the benefits to be derived would be general it is considered that the Federal Government should bear all the first cost of construction. Cost of a public landing and improvements to berthing areas are considered to be self-liquidating and should be borne by local interests.

ESTIMATES OF BENEFITS

37. There is no recreational fleet based in Corea Harbor. Benefits to be derived from navigational improvement would be general and result from increased fishing catch by the fishing fleet after improvement.

38. At the present time about 12 seiners and draggers use the harbor intermittently. These boats are larger than the locally based lobster fleet, drawing 6 to 8 feet, when loaded. Because of their draft access to the greater part of the wharf area is only possible over high tide. It was claimed that considerable fishing time is lost by these boats in waiting for sufficient tide to gain access to the wharves for the purose of landing a catch. Deepening of the area between the wharves and the anchorage was desired to eliminate these delays. It is considered that some benefits could ensue from this aspect of improvement. It is also considered that since these craft land their catch at the Corea Seafoods wharf which is within 50 feet of the existing project this benefit could be assured by improvement of the berth, which is a local responsibility.

39. The private wharves along the north and west side of the harbor are used on the tide by lobster boats. Rock was encountered on the east and west limits of the existing anchorage. Probings taken in previous surveys indicate a very good probability of ledge on the north side of the anchorage so that this improvement would be relatively expensive. If the Federal project was extended as desired by local interests to provide access to these wharves the owners would be required to provide adequate berths. Local interests gave no indication that they would improve their berths or that improving access to these wharves would increase the present lobster catch or reduce their operating costs. It is also noted that extending the wharves probably would be much less expensive than deepening the access area. In view of these factors no further consideration was given to this desired improvement.

40. Local interests claim a substantial increase in the value of fish landings at Corea Harbor if the anchorage is enlarged as desired. They expect the present annual value of the lobster catch of about $45,000 to increase by about 20 percent. It was stated at the hearing that because of lack of space in the anchorage the individual fishermen cannot keep lobster cars and must sell his catch daily. If there was space for lobster cars the fishermen could store their catch and sell it when the price was more favorable. The fishermen could thus make a an additional $600 to $1,000 annually. While this would result in a higher value to the fisherman it would not increase the value of fish brought to the harbor and is therefore not considered a general benefit to navigation.

41. As it is considered that the existing fleet could realize all the potentialities of the existing anchorage with more efficient methods of mooring, no benefits have been attributed to this source. This consideration is based on the use of double moorings, placed fore and aft. By mooring in this manner it is considered that 12 or more boats per acre could be moored safely. Thus the existing fleet of 38 boats and any anticipated additions thereto could be accomodated in the existing anchorage.

42. Local interests also claimed a 40 percent increase in the value of ground fish landings if additional anchorage were provided. They expect that 7 to 10 draggers would transfer to Corea Harbor if there was space for them. While this may be somewhat optimistic, benefits have been evaluated on this basis. The present value of ground fish landings is about $45,000 so that a 40 percent increase would be valued at $18,000. Local interests report that the draggers operating from Corea make a round trip averaging 12 hours and that Corea is 2 hours closer to the fishing grounds than other harbors. The transferred boats would therefore have an additional 2 hours available for fishing. It is considered that 2/12 of the $18,000 additional landings expected would be from increased fish catch and 10/12 would be the value of fish now landed at other harbors. The general benefit from increased fish catch thus resulting from the improvement is therefore evaluated at $3,000.

COMPARISON OF BENEFITS TO COSTS

43. The evaluated annual benefits of $3,000 and the estimated annual charges of $12,000 indicate a benefit-cost ratio of 0.3.

PROPOSED LOCAL COOPERATION

44. Benefits to be derived from improvement of Corea Harbor would be those derived from the savings effected by the fishing fleet and general in nature. Therefore, if construction should be authorized, the first cost of construction should be borne by the Federal Government.

45. Local interests should be required to hold and save the United States free from damages due to construction and maintenance of the improvement, and to provide without cost to the United States all lands, easements and rights-of-way necessary for construction of the project and for the subsequent maintenance thereof. Local interests should also be required to provide adequate public landing facilities open to all on equal terms accessible at all periods of tide, to enable fish landings to be made without tidal delay to the draggers.

COORDINATION WITH OTHER AGENCIES

46. All Federal, state and local agencies having interest in the improvement of Corea Harbor were notified of the public hearing held at Gouldsboro, Maine on December 18, 1957. Representatives of the Town of Gouldsboro, and other local interests have been consulted during the study. The United States Coast Guard has stated that no additional aids to navigation would be necessary in the event of improvement.

DISCUSSION

47. Corea Harbor is a small well sheltered cove immediately west of the entrance to Gouldsboro Bay, Maine. The entire harbor is contained in the village of Corea, a section of the town of Gouldsboro. The cove is small and somewhat rectangular in shape. Its longest dimension is about 1,100 feet in an east and west direction. North and south, it averages about 600 feet. Its anchorage, dredged under the existing Corps of Engineers project, is 600 feet long and 400 feet wide. Project depth is 8 feet. An 80-foot wide entrance channel is situated at the southeast corner of the anchorage. Elsewhere in the harbor shallow depths prevail, the major portion of it being above low tide. The wharves are located generally on the north and west sides of the harbor. Navigation to the wharves is not possible during low water periods.

48. There are no manufacturing industries in the town. The principal occupations of the locality are fishing and those occupations associated with the fishing industry. Two fish canneries are located in the town of Gouldsboro. Neither of these are situated in the Corea section.

49. The permanently based fleet consists of 38 boats, chiefly lobster fishing craft. These boats average 30 to 40 feet in length and draw about 3 or 4 feet. During the peak of the fishing season about 12 additional boats base in the harbor. These latter boats are of the seiner or dragger type and are larger than the residential fleet. Average length is 40 to 60 feet with drafts ranging from 4 feet light to 8 feet loaded. No evidence of a local recreational fleet is available, indicating that fishing boats are the sole users of the harbor.

50. The chief desire of local interests for navigational improvement of Corea Harbor consists of the provision of additional anchorage. It was claimed at the public hearing that the harbor is overcrowded during the fishing season. It was further claimed that mooring space in the anchorage is so limited that 4 or 5 boats are forced to moor in the entrance channel. With boats obstructing the entrance channel. With boats obstructing the entrance channel and the anchorage filled to capacity, navigation to the wharves is extremely difficult, if not impossible, for fishing boats wishing to to land their catch at the wharves. To remedy this condition and to provide for additions to the fleet, local interests expressed a desire to expand the anchorage, preferably in the northeast section of the harbor. Another area cited for expansion lies in that portion of the harbor immediately west of the entrance and south of the anchorage.

51. In justification of improvement local interests cited the position of the fishing grounds with respect to Corea Harbor. It was stated that the harbor is two hours sailing time closer to the harbor than any other harbor in the vicinity. Located in such a favorable position, it was claimed that more fishing boats would be encouraged to base here. It was also claimed that local fishermen, who now have to base in other harbors for lack of room in Corea, would base in the harbor. Another reason cited for harbor expansion consisted of probable establishment of fish processing plants. It was stated that at times various entrepreneurs have prospected Corea Harbor with a view to establishment of fish processing plants in the vicinity. Upon survey of harbor conditions the prospective plant operators were deterred from locating in Corea by reason of insufficient anchorage. It was claimed that the present anchorage would not accomodate sufficient fishing boats to supply the plants. One resident of Corea stated that his consideration of entering the fish processing business was nullified for the same reason. It was further stated that expansion of the anchorage would allow space for sufficient additional boats to supply any processing plant that may locate in the area. Another deficiency noted in the harbor was the lack of sufficient depths to allow access to the wharf area at all times. Local interests expressed a desire to have the areas near the wharves deepened to the same depth as the anchorage.

52. The 1934 report on which the existing project isbbased contained a statement to the effect that the fishing fleet consisted of 45 boats. In 1958 local interests reported a fleet of 38 fishing craft. The make up of both fleets is comparatively similar, the major portions of each being lobster fishing craft. Local interests report that larger boats are in current use because the more prolific fishing grounds are located further offshore than the grounds used formerly. Larger boats are required to navigate this distance. This claim appears

reasonable for the dragger-type boat. It is not considered that lobster fishermen fall into this category, as the lobster-fishing grounds are usually close to shore. Therefore additional anchorage if necessary would be required to accommodate the larger seiner or dragger type boats. In view of this fact local interests declared that a 6-foot deep extension of the anchorage would suffice for the needs of navigation, as the shallower draft lobster boats could be assigned mooring space in the extension, leaving more space for the larger boats in the deeper anchorage. The 2-acre improvement desired northeastward of the existing project and the area west of the entrance channel would allow for a large part of the lobster boats. The remaining 5.5 acres of existing anchorage would then accommodate the remainder of the existing fleet, the 12 large draggers that use the harbor during the peak of the fishing season and the additional draggers that local interests expect to transfer to the harbor.

53. It is considered that one of the chief causes of overcrowded conditions in the existing anchorage lies in the method of mooring the fleet. The present method allows for a free swinging type of mooring. In partly exposed harbors where high local wind waves plus long reaches of wind exposures are prevalent, this type of mooring is considered necessary for safety reasons. In such a well sheltered harbor as Corea it is not believed that this type of mooring is absolutely essential. Double moorings, fore and aft, spaced far enough apart laterally to allow for side drift would allow anchorage in one acre for at least 12 boats 40' long. Mooring in this fashion would allow for the present fleet, the anticipated fleet, and leave a fairway for access to the wharves. Other suggested methods of mooring would utilize mooring dolphins, floats or a combination of both of these methods.

54. The lack of sufficient depths at, or in access areas to the wharves, is considered to be the primary difficulty for the larger boats. These boats draw 6 to 8 feet loaded. Depths at the wharves used by these boats average 1 to 2 feet above mean low water. Thus, it is apparent that with a mean range of 10.5 feet of tide, access is only possible for about a two hour period over high water. Consequently a waiting period of 1 to 10 hours is sometimes necessary, depending on the stage of the tide the boats enter the harbor. If the boats arrive too late in the evening to unload, mooring in the anchorage is necessary since wharfage is not available over all stages of the tide. This condition makes less anchorage available for the home fleet. Adequate berth depths would solve this problem.

55. Local interests claimed that present conditions in the harbor precluded establishment of fish processing plants in the locality. Reasons cited included crowded conditions in the anchorage and insufficient depths in the harbor. As stated previously, it is considered that crowded conditions in the anchorage could be alleviated by employment of better mooring methods than are now used. It is considered that the claimed shallow depths pertain to that portion of the harbor that lies between the anchorage limits and the wharf area. It is also considered that the shallow depths mentioned included berthing areas

at the wharves. Wharves and berthing areas are in most cases considered entirely the responsibility of local owners and not subject to improvement by the Federal Government. Dredging of the area between the limits of the existing project and the berthing areas at the wharves would entail removal of a considerable amount of ledge rock. In the dredging of the existing project, such rock was encountered in several places on the east and west limits. Probings taken in earlier field surveys near the north and south limits also appear to indicate the presence of ledge or other hard material. Dredging of these materials could be accomplished only at relatively high costs.

56. With more suitable methods of mooring boats the existing anchorage can accomodate both the entire existing fleet, and any additions thereto that may be reasonably anticipated. Therefore, it is considered that the existing fleet would derive no benefits from any extension of the anchorage.

57. Benefits could be derived from deepening the area between the wharves and the anchorage. These benefits were not evaluated as it is considered that insufficient savings for the comparatively few craft would be derived to economically justify dredging the area. This consideration was based on the character of the material to be removed which included ledge.

58. Local interests claimed that the provision of additional anchorage would induce more of the larger boats to land their catch in the harbor. This claim has been studied and benefits resulting therefrom have been evaluated. It is estimated that transfer of 7 to 10 draggers to Corea Harbor expected by local interests would result in additional fish catch because Corea is closer to the fishing area.

59. Annual benefits of $3,000 would be derived from this source. The $3,000 annual benefits compared with annual carrying charges of $12,000 indicates the project is not economically justified.

CONCLUSION

60. In view of the foregoing, the Division Engineer concludes that ample room exists in the anchorage at Corea Harbor for the existing fleet. He further concludes that deepening of the area between the anchorage and the wharves or extension of the anchorage cannot be justified economically at this time.

RECOMMENDATION

61. The Division Engineer recommends no modification of the existing project for Corea Harbor be made at this time.

ALDEN K. SIBLEY
Brigadier General, U.S. Army
Division Engineer

CORPS OF ENGINEERS

U. S. ARMY

COREA HARBOR
MAINE

TOWN OF GOULDSBORO

COREA VILLAGE

FRANCIS LOBSTER POUND

LOBSTER POUND
COREA SEA FOODS

COREA LOBSTER CO.

ENTRANCE CHANNEL

EXISTING ANCHORAGE

DESIRED IMPROVEMENT
NOT RECOMMENDED
ENLARGE EXISTING 8-FT. ANCHORAGE

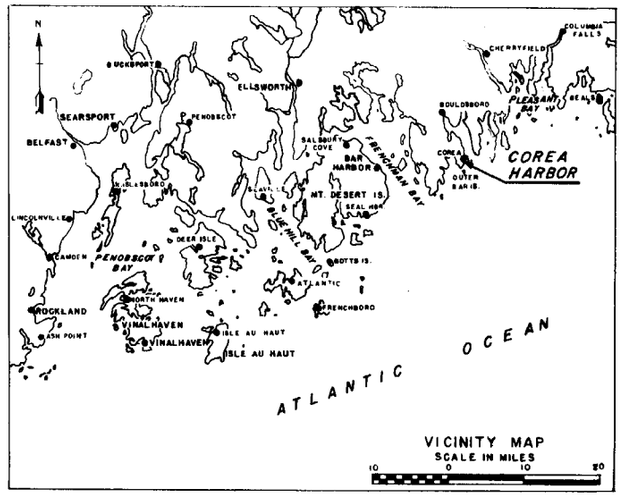
DESIRED IMPROVEMENT
NOT RECOMMENDED
ANCHORAGE 2 ACRES 6-FT. DEEP

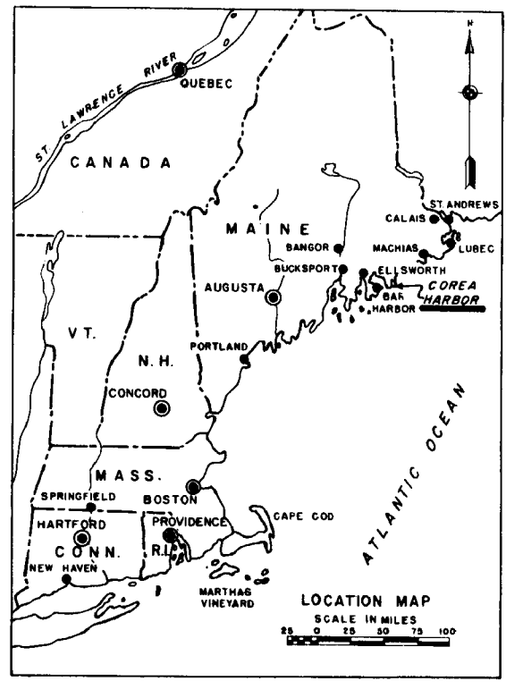
DESIRED IMPROVEMENT
NOT RECOMMENDED
ANCHORAGE 2 ACRES 6-FT. DEEP

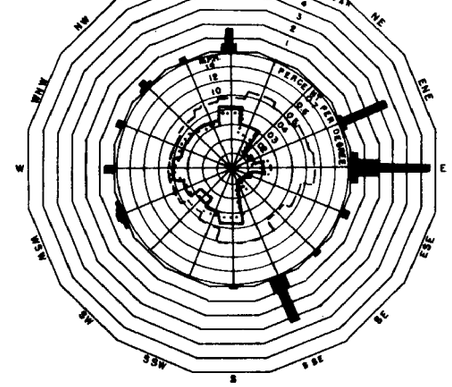
LEGEND:

Mean High Water
Mean Low Water
Probings shown thus P-4
Existing Project
Desired Improvement

Flood
Ebb







WIND DIAGRAM
PORTLAND, MAINE
OCTOBER 1949 – SEPTEMBER 1956

32 TO 38 M.P.H.
39 " 46 M.P.H.
47 OVER M.P.H.

••••• DURATION IN PERCENT PER DEGREE
—— MOVEMENT IN PERCENT PER DEGREE
— — AVERAGE SPEED IN M.P.H.

LIST OF PROBINGS

NUMBER	DEPTH OF WATER	ELEVATION BELOW M.L.W. DEPTH OF PROBE	ELEVATION BELOW M.L.W. PENETRATION	MATERIAL
1	0·9	12·8	11·9	Mud and sand
2	1·4	11·0	9·6	Mud, sand, light, gravel
3	1·9	3·9	2·0	Mud to rock
4	2·9	10·2	7·3	Mud, sand and gravel
5	7·5	12·3	4·8	Mud and sand
6	6·1	12·4	6·3	Sand and coarse gravel
7	1·0	11·3	10·3	Mud, sand, light, gravel
8	1·8	12·2	10·4	Mud and sand – soft
9	3·9	10·6	6·7	Hard packed sand and gravel
10	4·4	12·4	8·0	Sand, gravel, clay
11	1·5	10·1	8·6	Mud and sand, sand and hard gravel, clay
12	1·3	10·0	8·7	Mud and sand, hard blue clay
13	2·5	13·9	11·4	Mud and sand – soft
14	2·4	11·3	8·9	Mud, hard sand and coarse gravel
15	1·1	10·0	8·9	Mud, sand, coarse gravel to boulders
16	0·1	8·9	8·8	Hard packed sand and clay (to refusal)
17	1·4	8·0	6·6	Mud and sand to rock
18	1·4	7·0	5·6	" " " " "
19	0·9	8·2	7·3	Coarse gravel to rock
20	0·4	10·0	9·6	Hard packed sand and clay
21	1·4	9·9	8·5	Hard packed sand
22	1·5	10·2	8·7	Sand and coarse gravel
23	0·8	13·1	12·3	Mud and sand
24	8·0	11·4	3·4	" " "
25	+1·6	+1·6	0·0	Bare ledge
26	2·8	5·6	2·8	Soft mud to ledge
27	2·4	7·3	4·9	Mud on top thru to hard pan
28	0·6	9·2	8·6	Soft mud, thick mud to hard pan
29	3·2	10·3	7·1	" " and sand to ledge

NOTES:

Soundings and probings are in feet and tenths and are referred to the plane of Mean Low Water.
Hydrography from survey of Sept. 15 & 16 1953.
Topography from previous surveys and subsequent field inspections.
Probings are taken from previous field surveys made in 1937 & 1938.

IN 1 SHEET

SCALE IN FEET
100 0 100 200 300

NEW ENGLAND DIVISION, WALTHAM, MASS. MARCH 1959

APPROVED
CHIEF, ENGINEERING DIVISION

APPROVED
COL. C.E. DIVISION ENGINEER

SUBMITTED
CHIEF, PLANNING AND REPORTS BRANCH

TO ACCOMPANY SURVEY REPORT DATED APRIL 7, 1959

CHIEF, LOCAL PROTECTION SECT.

FILE NO. 1410 D-5-2

PROJECT ENGINEER